

WPEQ-261ACNI(BT)

802.11ac/a/b/g/n Industrial-Grade

2T2R Wi-Fi+Bluetooth 5.0 Combo

Half mini PCIe Module



Industrial-Grade Wi-Fi+Bluetooth Combo Solution

WPEQ-261ACNI(BT) is high performance 802.11ac/a/b/g/n dual band 2T2R Industrial-Grade (-40°C ~85°C) Wi-Fi+Bluetooth 5.0 combo mini PCIe module, multiple output (MU-MIMO) with two spatial streams IEEE802.11ac/a/b/g/n WLAN standards and Bluetooth 5.0+HS, designed to deliver superior integration of WLAN+Bluetooth and low energy technology.

It supports Windows and Linux Drivers solution. WPEQ-261ACNI(BT) is using a QCA6174A-5 along with Windows and Linux driver which provide excellent solution for Automation/ Robotic various applications. Adopting the latest 802.11ac solution. WPEQ-261ACNI(BT) is dual band AC on 2.4GHz+5GHz and incorporates the latest Bluetooth 5.0. The download speed are 300Mbps on N networks and 867Mbps on AC network. WPEQ-261ACNI (BT) is integrates the Bluetooth transmission technology for voice and data transfers between devices in a short distance.

Embedded Application

Applications include medical devices, security systems, industrial PC, Point of Sale, digital signs, set-top/net-top box, embedded / tablet PC's, Vehicle mounted front, Robot/ Intelligent Gateway, Gaming machine, etc.

Key Feature

- Supports low power PCIe (w/L1 substate) interfaces for WLAN and USB1.1 interface for Bluetooth.
- Support Bluetooth 5.0 + HS, BLE, ANT+ and be backwards compatible with Bluetooth 1.2, 2.X + enhanced data rate.
- Supports 20/40 MHz at 2.4 GHz and supports 20/40/80 MHz at 5 GHz (SW PL determines 2.4 GHz HT40/VHT40 support)
- Compatible for 5 GHz 802.11ac, or 2.4/5 GHz 802.11n WLAN applications.

Specification

Standards	IEEE 802.11ac/a/b/g/n (2T2R) Bluetooth V5.0, V4.2, V4.1, V4.0 LE, V3.0+HS, V2.1+EDR
Chipset	Qualcomm QCA6174A-5
Data Rate	802.11b: 11Mbps 802.11a/g: 54Mbps 802.11n: MCS0~15 802.11ac: MCS0~9 Bluetooth: 1 Mbps, 2Mbps and Up to 3Mbps
Operating Frequency	IEEE 802.11ac/a/b/g/n ISM Band: 2.400GHz~2.497GHz, 5.150GHz~5.845GHz *Subject to local regulations
Interface	WLAN: PCIe ; Bluetooth: USB
Form Factor	Half Mini PCIe
Antenna	2 x IPEX MHF1 connectors (ANT1 for WLAN/BT, ANT2 for WLAN)
Modulation	Wi-Fi: 802.11b: DSSS (DBPSK, DQPSK, CCK) 802.11g: OFDM (BPSK, QPSK, 16-QAM, 64-QAM) 802.11n: OFDM (BPSK, QPSK, 16-QAM, 64-QAM) 802.11a: OFDM (BPSK, QPSK, 16-QAM, 64-QAM) 802.11ac: OFDM (BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM) Bluetooth: Header: GFSK Payload 2M: $\pi/4$ -DQPSK Payload 3M: 8-DPSK
Power Consumption	TX mode: 610mA RX mode: 285mA
Operating Voltage	DC 3.3V
Operating Temperature Range	-40°C~85°C
Storage Temperature Range	-40°C~85°C
Humidity (Non-Condensing)	10%~95% (Operating) 10%~95% (Storing)

Dimension L x W x H (in mm)	29.85mm(± 0.15 mm) x 26.65mm(± 0.15 mm) x 2.65mm(± 0.2 mm)
Weight (g)	3.5g
Driver Support	Win7/8.1/10 Linux (Open Source), Recommend Kernel v4.0+
Security	64/128-bits WEP, WPA, WPA2, WPA3, 802.1x

OUTPUT POWER & SENSITIVITY
802.11b

Data Rate	Tx \pm 2dBm	Rx Sensitivity
11Mbps	15dBm	\leq -91dBm

802.11g

Data Rate	Tx \pm 2dBm	Rx Sensitivity
54Mbps	15dBm	\leq -75dBm

802.11n / 2.4GHz

	Data Rate	Tx \pm 2dBm (1TX)	Tx \pm 2dBm (2TX)	Rx Sensitivity
HT20	MCS7	13dBm	16dBm	\leq -71dBm
HT40	MCS7	13dBm	16dBm	\leq -69dBm

802.11a

Data Rate	Tx \pm 2dBm	Rx Sensitivity
54Mbps	13dBm	\leq -65dBm

802.11n / 5GHz

	Data Rate	Tx \pm 2dBm (1TX)	Tx \pm 2dBm (2TX)	Rx Sensitivity
HT20	MCS7	12.5dBm	15.5dBm	\leq -74dBm
HT40	MCS7	12.5dBm	15.5dBm	\leq -71dBm

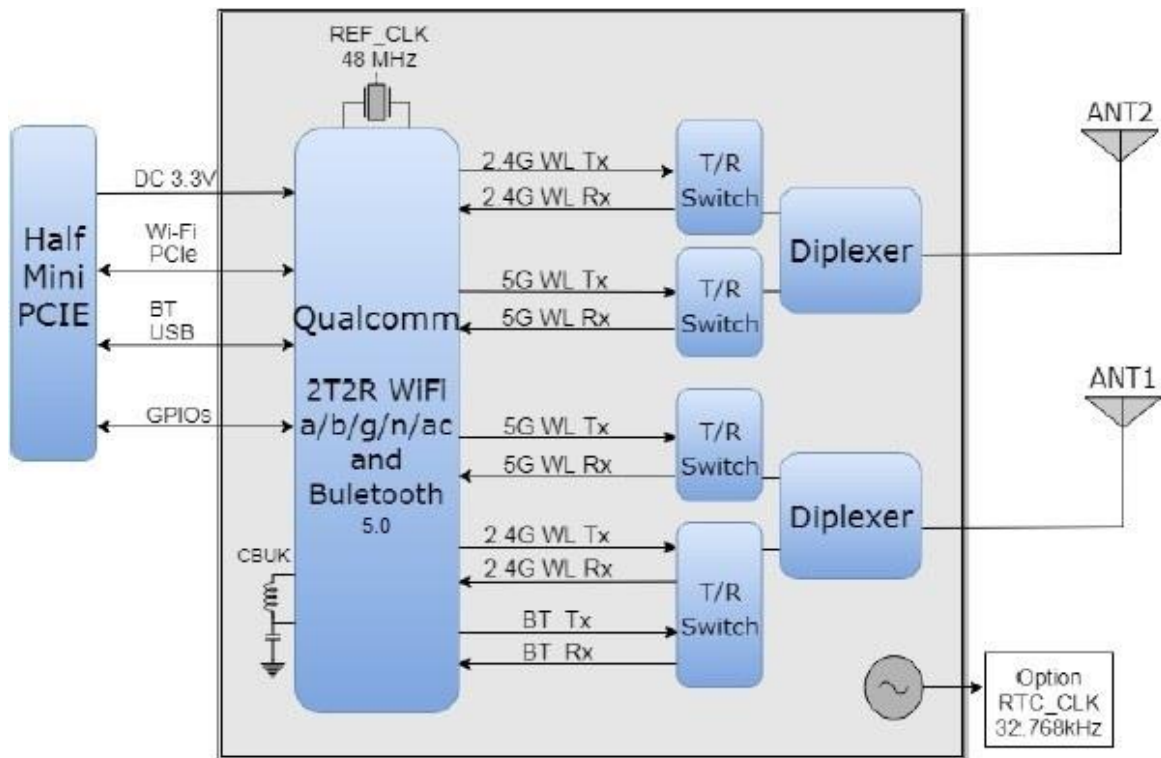
802.11ac

	Data Rate	Tx \pm 2dBm (1TX)	Tx \pm 2dBm (2TX)	Rx Sensitivity
VHT80	MCS9	10dBm	13dBm	\leq -63dBm

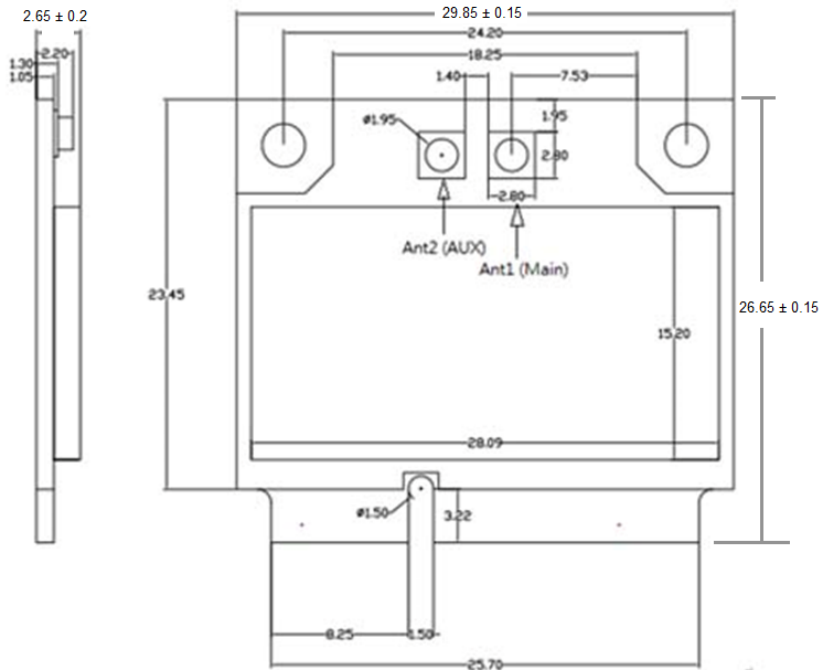
Bluetooth

Data Rate	Tx \pm 2dBm (Class 1 Device)	Rx Sensitivity
3Mbps	$3 \leq$ Output Power \leq 7dBm	<0.1% BR, BER at -83dBm

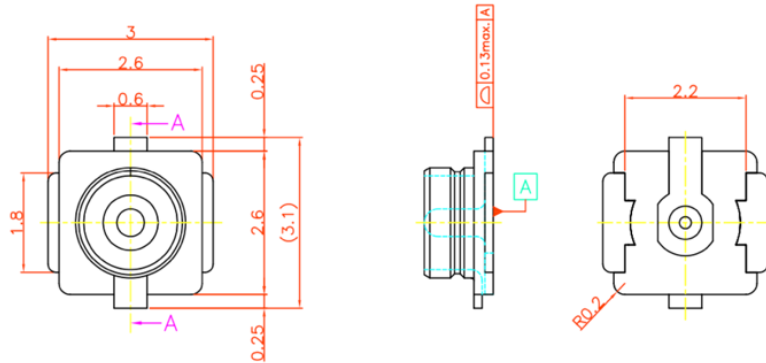
Block Diagram



Mechanical Dimension (mm)

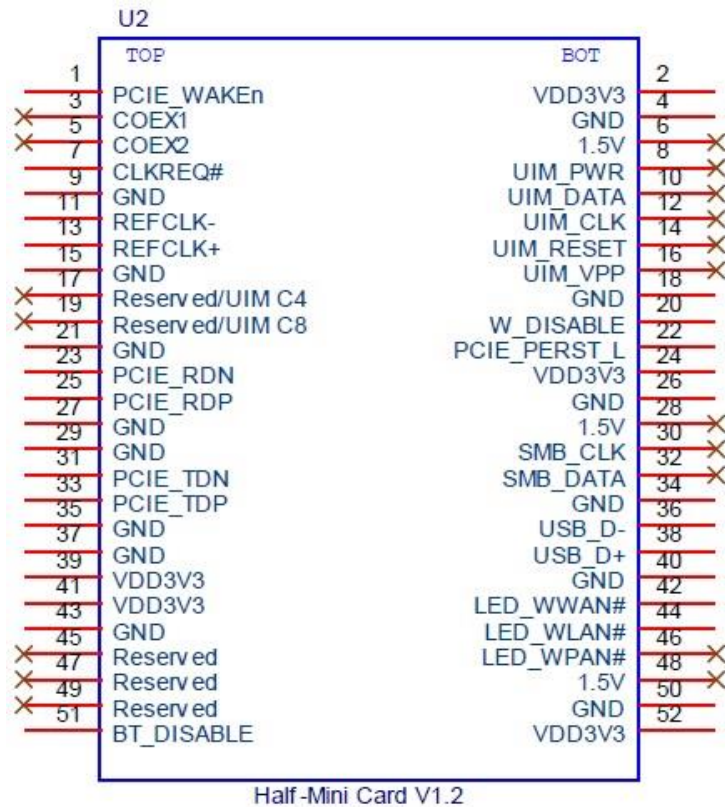


MHF1 connector spec.



Unit: mm

Pin Assignment



Pin Assignment

TOP			
Pin#	Pin Name	Type	Description
1	PCIE_WAKE_L	O	PCIe wake signal
3	NC	-	No connect
5	NC	-	No connect
7	PCIE_CLKREQ_L	I/O	PCIe clock request
9	GND	-	Ground connections
11	PCIE_RCLK_N	I	PCI Express differential clock input- Negative
13	PCIE_RCLK_P	I	PCI Express differential clock input- Positive
15	GND	-	Ground connections
17	NC	-	No connect
19	NC	-	No connect
21	GND	-	Ground connections
23	PCIE_TX_N	O	PCI Express transmit data- Positive
25	PCIE_TX_P	O	PCI Express transmit data- Negative
27	GND	-	Ground connections
29	GND	-	Ground connections
31	PCIE_RX_N	I	PCI Express transmit data- Negative
33	PCIE_RX_P	I	PCI Express transmit data- Positive
35	GND	-	Ground connections
37	GND	-	Ground connections
39	VDD_3V3	I	VDD system power supply input
41	VDD_3V3	I	VDD system power supply input
43	GND	-	Ground connections
45	NC	-	No connect
47	NC	-	No connect
49	NC	-	No connect
51	BT_RF_KILL_L	-	Turn off BT RF analog and front-end. Active low

Pin Assignment

BOTTOM			
Pin#	Pin Name	Type	Description
2	VDD_3V3	I	VDD system power supply input
4	GND	-	Ground connections
6	NC	-	No connect
8	NC	-	No connect
10	NC	-	No connect
12	NC	-	No connect
14	NC	-	No connect
16	NC	-	No connect
18	GND	-	Ground connections
20	WLAN_RF_KILL_L	I	Turn off WLAN RF analog and front-end. Active low.
22	PCIE_PERST_L	I	PCIe host indication to reset the device Active low.
24	VDD_3V3	I	VDD system power supply input
26	GND	-	Ground connections
28	NC	-	No connect
30	NC	-	No connect
32	NC	-	No connect
34	GND	-	Ground connections
36	USB_D-	I/O	USB serial differential data Negative
38	USB_D+	I/O	USB serial differential data Positive
40	GND	-	Ground connections
42	WLAN_LED	OD	WLAN LED
44	BT_LED	OD	Bluetooth LED
46	NC	-	No connect
48	NC	-	No connect
50	GND	-	Ground connections
52	VDD_3V3	I	VDD system power supply input

Certification

Dipole Ant.

 FCC
 IC
 NCC
 CE (RED EN 300 328 V2.1.1 / EN 301 893 V2.1.1)
 MIC
 ASNZS

Ordering Information

Product Name	Part Number	Description
WPEQ-261ACNI(BT)	R9701890018	11ac/a/b/g/n Industrial Grade 2T2R WiFi + BT Half Mini PCIe

Optional Accessory

Product Name	Part Number	Description
AD-103AG	R3410110203	Dipole Antenna, 2dBi 2.4GHz/5GHz, RP-SMA(M) connector
AD-302N	R3410110221	Dipole Antenna, 3dBi/2dBi 2.4G/5GHz, RP-SMA(M) connector
AD-303N	R3410110222	Dipole Antenna, 3dBi/3dBi 2.4G/5GHz, RP-SMA(M) connector
AD-305N	R3410110223	Dipole Antenna, 5dBi/5dBi 2.4G/5GHz, RP-SMA(M) connector
CBIRF-ME150	R3470300023	RF Cable, I-PEX/MHF1 to RP-SMA(F); L:150mm; Coaxial 1.37 Black
CBIRF-ME250	R3470300024	RF Cable, I-PEX/MHF1 to RP-SMA(F); L:250mm; Coaxial 1.37 Black